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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/750,417	12/31/2003	Paul Johnson	24NS-129203	4646
7590 09/14/2005			EXAMINER	
Patrick W. Rasche Armstrong Teasdale LLP Suite 2600 One Metropolitan Square St. Louis, MO 63102			SAINT SURIN, JACQUES M	
			ART UNIT	PAPER NUMBER
			2856	
DATE MAILED: 09/14/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/750,417	Applicant(s) JOHNSON ET AL.	
	Examiner Jacques M. Saint-Surin	Art Unit 2856	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 3/11/05, 08/02/04, 3/12/04, 12/31/03.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 August 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>03/17/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-5, 7-16 and 18-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Johnson (US Patent 6,332,011).

Regarding claim 1, Johnson discloses a method of inspecting a portion of a weld between at least two materials (a method of inspecting an H1 weld between a shroud head flange and an upper shroud section, and an upper heat affected zone of the H1 weld), said method comprising:

mounting at least one ultrasonic phased array probe (96) including at least one transducer having a plurality of elements (Referring to FIGS. 3 and 4, phased array probe 96 contains one linear array transducer having a plurality of elements 98, see: col. 3, lines 58-61) within a housing (54) containing a liquid (a boiling water nuclear reactor pressure vessel (RPV) 1 and water circulated up through core 22 is at least partially converted to steam, see: col. 2, lines 66-67 and col. 3, lines 15-16) therein;

attaching the housing (54) adjacent an outer surface (92) of the portion of the weld (70) such that the liquid (water) is adjacent the outer surface of the portion of the weld (70); and

scanning the weld (70) with the at least one ultrasonic phased array probe (96) (ultrasonic beam 100 is focused so that a focal point 108 of beam 100 aligns with upper fusion line 104 of weld 70 and outer surface 92 of shroud head flange 54, see: col. 4, lines 48-50).

Regarding claim 2, Johnson discloses the weld (70) is between at least two similar materials (shroud head flange and upper shroud section), see: col. 1, lines 65-66.

Regarding claim 3, Johnson discloses the weld (70) is between two dissimilar materials (upper shroud section and upper heat affected zone), see: col. 1, lines 66-67.

Regarding claims 4, 8 and 16, Johnson discloses the ultrasonic probe is continuously moved circumferentially along the top surface of the shroud head flange in increments of between about 0.05 inch to about 1.0 inch with the H1 weld ultrasonically scanned after each incremental move, see: col. 2, lines 10-14.

Regarding claim 5, Johnson discloses probe 96 is triggered to emit an ultrasonic sound beam 100 which is focused at a point on a line which coincides with the upper fusion line 104 of weld 70 and a lower surface 106 of shroud head flange 54. Johnson further discloses Further, the method provides for detection, length and through-wall sizing of surface-connected planar flaws within the weld metal, heat affected zone, and adjacent base metal material, see: col. 5, lines 22-25.

Regarding claims 7, 9-10, 14 and 18-20, Johnson discloses probe 96 can electronically steer ultrasonic sound beam 100 to scan H1 weld 70 with the beam moving from shroud head flange outer surface 92 to shroud head flange inner surface

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88, and acquiring scan data over a length of the scan. Ultrasonic probe 96 is then incrementally moved circumferentially along upper surface 102 of shroud head flange 54 and weld 70 is again ultrasonically scanned. Ultrasonic probe 96 is continuously moved circumferentially along upper surface 102 of shroud head flange 54 in increments of between about 0.05 inch to about 1.0 inch with the H1 weld ultrasonically scanned after each incremental move, see: col. 4, lines 47. Note that the probe is moving circumferentially therefore emitting the ultrasonic beam at a plurality of steering angles.

Regarding claim 11, Johnson shows in Figs. 3 and 4, a housing (54) containing liquid; and at least one ultrasonic phased array probe (96) mounted partially within said housing liquid (54).

Regarding claim 12-13, Johnson discloses Referring to FIGS. 3 and 4, phased array probe 96 contains one linear array transducer having a plurality of elements 98 which emits an ultrasonic sound beam 100. The basic parameters of phased array probe 96 are defined as frequency, aperture A, element size X, element width Y, pitch or element spacing P, and number of elements 98, see: col. 3, lines 58-64. Johnson further discloses a suitable transducer frequency is 2mHz for the material type and thickness of shroud 20, see: col. 3, lines 65-67 and col. 4, lines 1-3.

Regarding claim 15, it is similar in scope with claim 1 and therefore is rejected for the reasons set forth for that claim. Furthermore, Johnson discloses emitting an ultrasonic sound beam from the ultrasonic probe, electronically steering the ultrasonic sound beam to scan the weld joining the shroud head flange and the upper shroud

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section with the beam moving from an outer surface of the shroud to an inner surface of the shroud, and acquiring scan data over a length of the scan, see: col. 2, lines 1-7. Fig. 4 shows at least two pipes 70 and 76.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 6 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson (US Patent 6,332,011) in view of Buckley (US Patent 5,571,968).

The difference between these claims and Johnson is the recitation of releasably attaching the housing such that a water-tight seal exists between the housing and the surface of the portion of the weld, wherein the seal is an elastomer. Watts discloses a sealing ring (not shown) between the rings 54 and the conduit makes a water-tight seal, see: col. 3, lines 31-33. Note that the water-tight seal is equivalent to an elastomer. It would have been obvious to one of the ordinary skill in the art at the time of the invention to utilize in Johnson the sealing of Watts because it would provide any suitable means for releasably securing the housing to the base thereby providing a welding connection between the housing and the surface of the weld in an efficient manner.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Buckley (US Patent 5,571,968) discloses an apparatus for mounting a plurality of ultrasonic probes for movement in specified directions for detecting defects in a body.

Davis et al. (US Patent 6,904,817) discloses a method and apparatus for examining obstructed welds.

Paillaman et al. (US Patent 6,865,243) discloses a method of detecting cracks in jet pump beams of a nuclear reactor.

Richardson et al. (US Patent 5,009,105) discloses an apparatus for ultrasonic examination of BWR shroud access cover plate retaining welds.

Clark et al. (US Patent 3,988,922) discloses a vessel examination system.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jacques M. Saint-Surin whose telephone number is (571) 272-2206. The examiner can normally be reached on Mondays through Fridays 10:30 A.M. -7:00 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on (571) 272 2208. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jacques M. Saint-Surin
September 11, 2005



HEZRON WILLIAMS
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